

Version Control in RStudio

Robert Smith

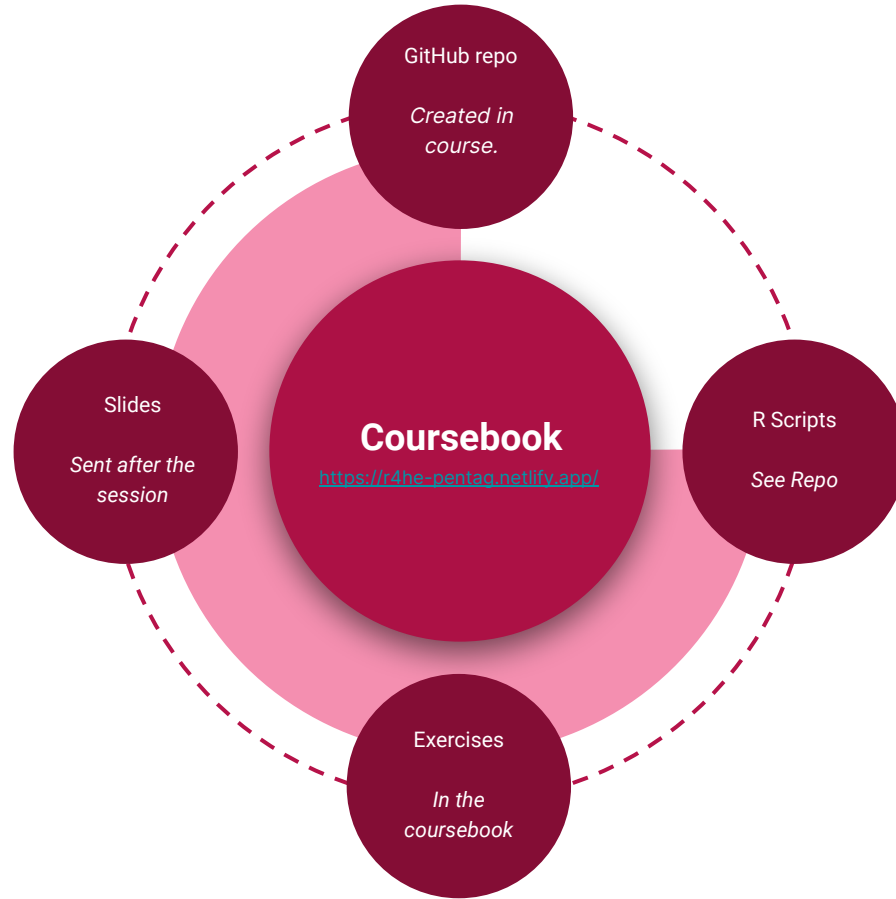
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The coursebook

Building Health Economic
Models in R

Table of contents

1 **Using this book**

2 About us

3 Background

4 Introduction to R

5 Version Control

References

1 Using this book



Note from the authors: This work is a living document and is being adapted all the time based upon comments. New sections are being included prior to teaching. If you have suggestions for improving this book, please contact Robert Smith by email:
rsmith@darkpeakanalytics.com.

— Dark Peak Analytics Teaching Team

This book was created as an accompaniment to the taught sessions, much of which will follow this book, and exercises, some of which are included within the book also, included within this course. It is designed to serve as a first point of reference if something is unclear. It will signpost to further content.

It is written in R, using the [bookdown](#) package, which converts each chapter from an [Rmarkdown](#) file to a fully rendered book in PDF or HTML format. This is something that we will teach later on in the course.

On this page

1 [Using this book](#)



Version Control in RStudio Timetable

Time	Topic
13:00	Introductions Who are we, and why are we here?
13:15	Session 1 - Presentation The concept behind Git & GitHub, why bother?
13:40	Break / Time for Questions
13:45	Session 2 - Demonstration Working together using RStudio, Git and GitHub.
14:10	Session 3 - Q&A
14:30	Close



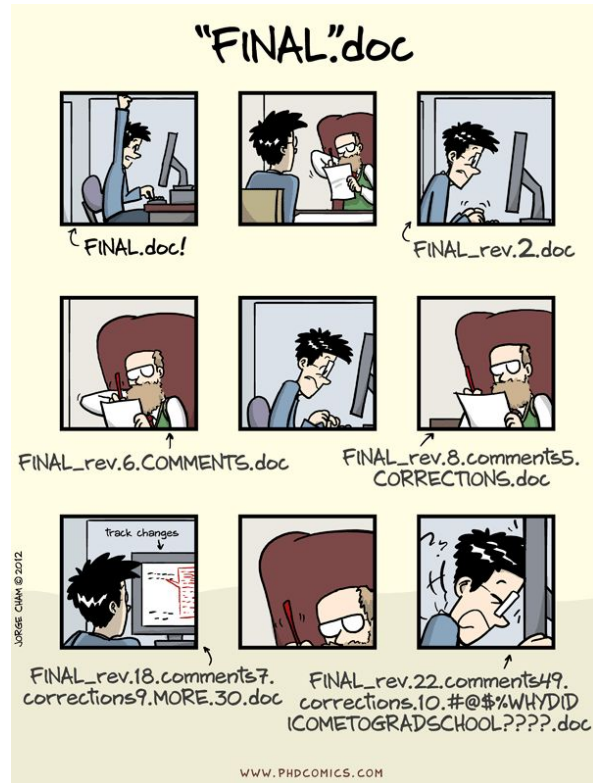
Session 1 - Presentation

*The concept behind Git &
GitHub, why bother?*

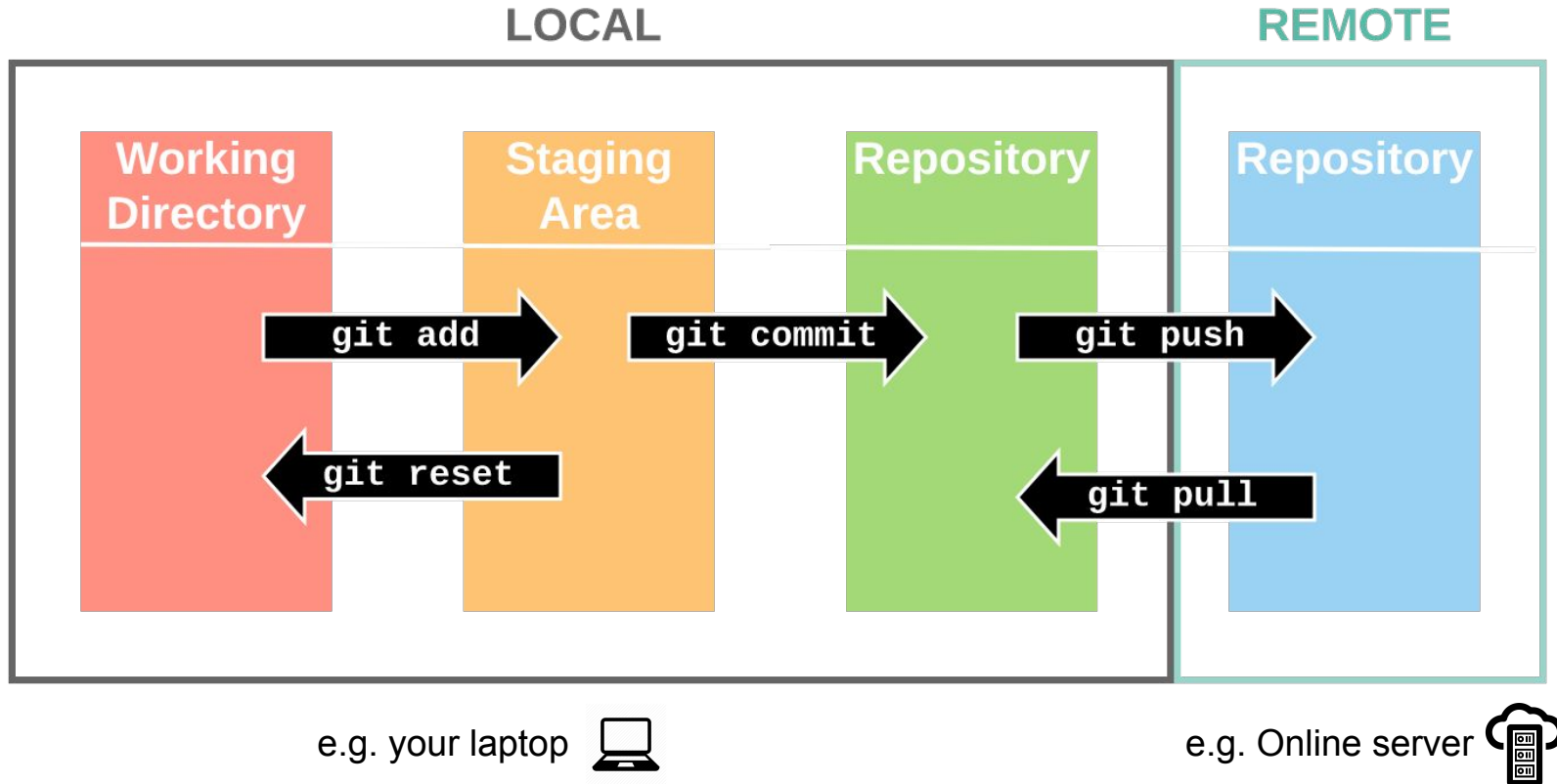
The concept behind Git & GitHub, why bother?

- What is Git?
- What is GitHub?
- GitHub for open source publishing
- GitHub for project management
- Application to Health Economics & Decision Science
 - Project model code
 - Packages & software development
 - Transparent model development, review and technical engagement
- Personal Experiences

What is Git?



What is Git?



What is GitHub?



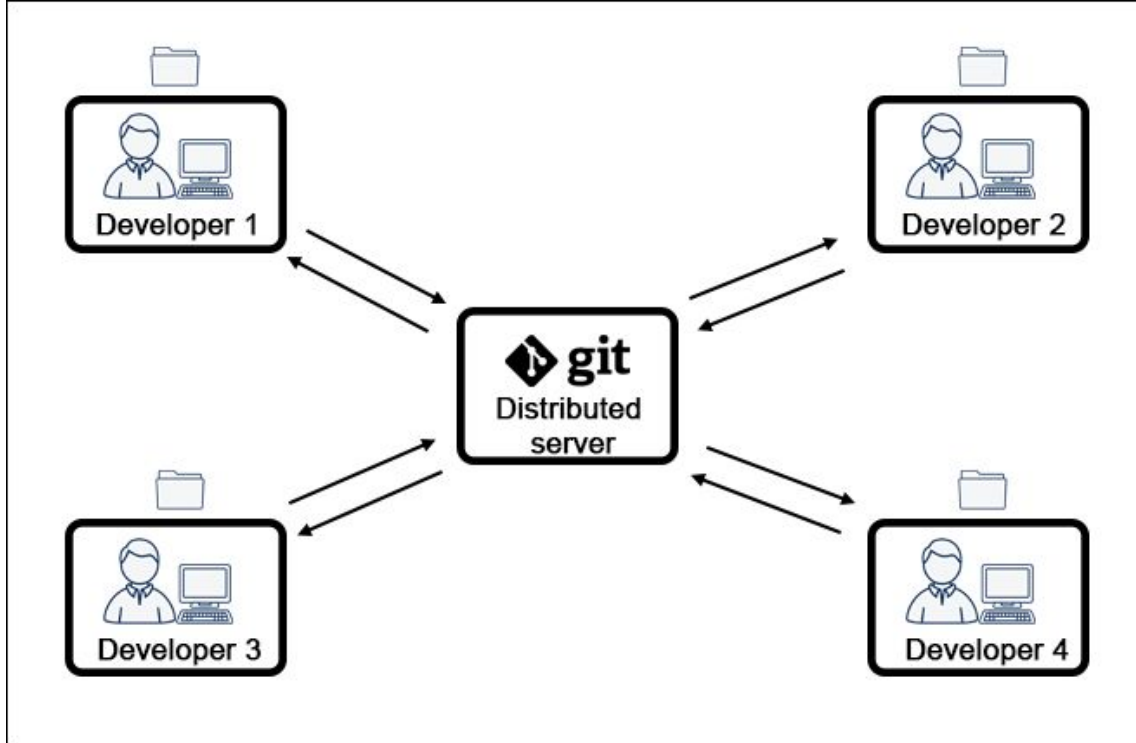
*“**GitHub, Inc.**, is an [Internet hosting service](#) for [software development](#) and [version control](#) using [Git](#). It provides the [distributed version control](#) of Git plus [access control](#), [bug tracking](#), [software feature requests](#), [task management](#), [continuous integration](#), and [wikis](#) for every project.^[4] Headquartered in [California](#), it has been a subsidiary of [Microsoft](#) since 2018.^[5]*

It is commonly used to host [open source](#) software development projects.^[6] As of June 2022, GitHub reported having over 83 million developers^[7] and more than 200 million [repositories](#),^[8] including at least 28 million public repositories.^[9]

It is the largest [source code](#) host as of November 2021.”

<https://en.wikipedia.org/wiki/GitHub>

What is GitHub?



[GitHub], huh, yeah.

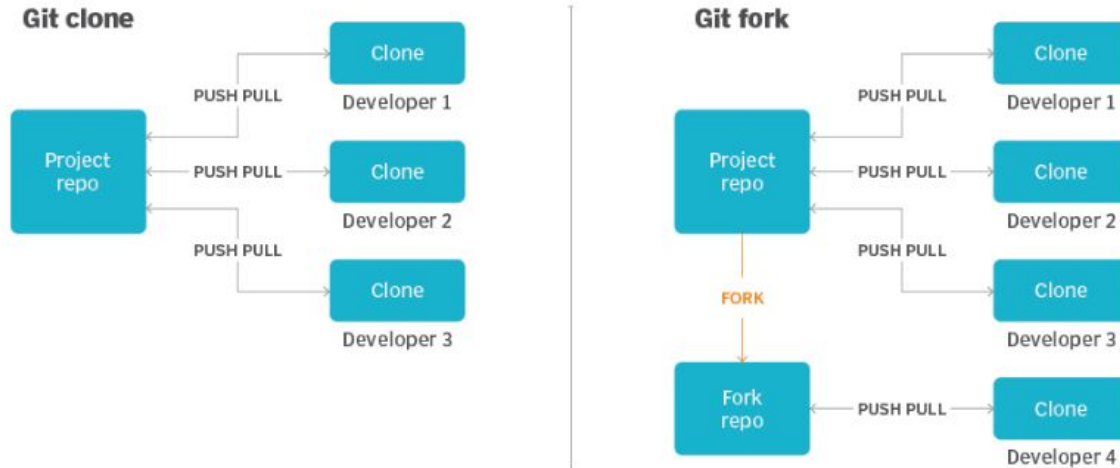
What is it good for?

Absolutely [loads of stuff].

Say it again, y'all.

What is GitHub?

Teams who want to work closely together will tend to clone, those who may want to work independently (e.g. academics) will tend to fork. We recommend that new starters fork, while experienced teams working together clone.



GitHub for open source publishing

The screenshot shows the article page on Wellcome Open Research. The article title is "Does ethnic density influence community participation in mass participation physical activity events? The case of parkrun in England [version 2; peer review: 3 approved]". The authors listed are Robert A. Smith, Paul P. Schneider, Alice Bullas, Steve Haake, Helen Quirk, Rami Cosulich, and Elizabeth Goyder. The article has 1221 views and 144 downloads. On the right, the "Open Peer Review" section shows a "Reviewer Status" of three green checkmarks and a table of "Reviewer Reports" with three reviewers, each having a "read" status. Below the reports is a list of three reviewers: Anne Grunsell, Gozde Ozakinci, and Stephen Senn. At the bottom, there is a "Comments on this article" section with a link to "All Comments (0)" and a button to "Add a comment".

Submitted by rasmith3

Aug. 4, 2022, 9:18 a.m.

Does ethnic density influence community participation in mass participation physical activity events?

Robert A. Smith, Paul P. Schneider, Alice Bullas, Steve Haake, Helen Quirk, Rami Cosulich¹, Elizabeth Goyder

Smith RA, Schneider PP, Bullas A et al. Does ethnic density influence community participation in mass participation physical activity events? The case of parkrun in England [version 2; peer review: 3 approved]. Wellcome Open Res 2020, 5:9 (<https://doi.org/10.12688/wellcomeopenres.15657.2>)

DOI: [10.12688/wellcomeopenres.15657.2](https://doi.org/10.12688/wellcomeopenres.15657.2)   

Mean reproducibility score: 10.0/10 | Number of reviews: 2

Brief Description

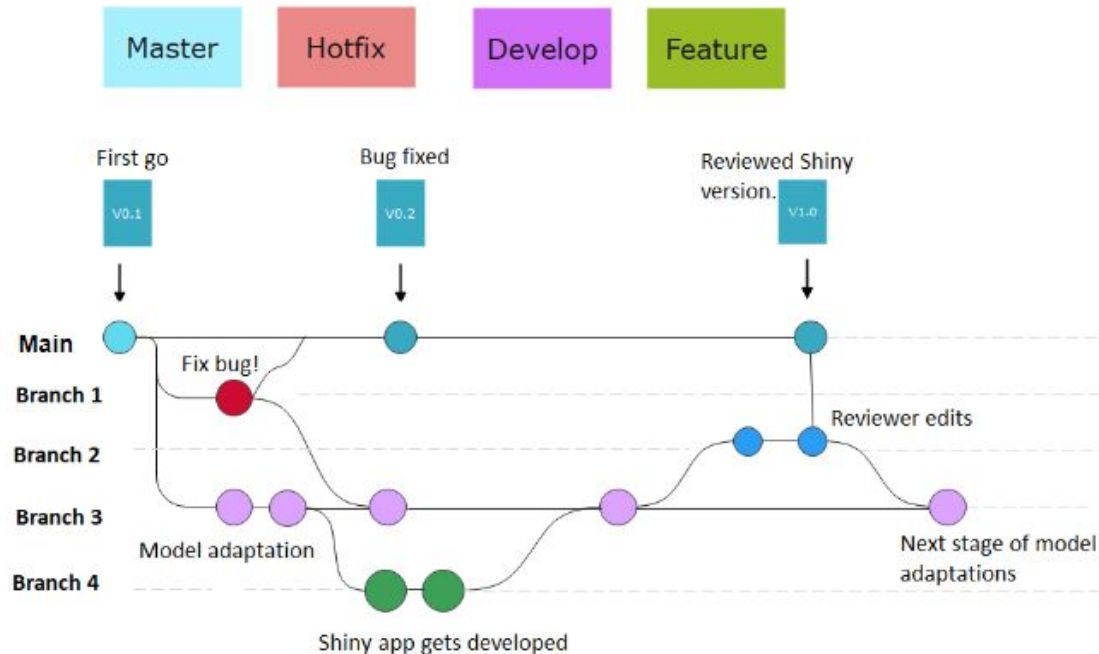
Background: parkrun has been successful in encouraging people in England to participate in their weekly 5km running and walking events. However, there is substantial heterogeneity in parkrun participation across different communities in England: after controlling for travel distances, deprived communities have significantly lower participation rates. Methods: This paper expands on previous findings by investigating disparities in parkrun participation by ethnic density. We combined geo-spatial data available through the Office for National Statistics with participation data provided by parkrun, and fitted multivariable Poisson regression models to study the effect of ethnic density on participation rates at the Lower layer Super Output Level. Results: We find that areas with higher ethnic density have lower participation rates. This effect is

https://github.com/ScHARR-PHEDS/DoPE_Public

<https://www.reprohack.org/paper/79/>



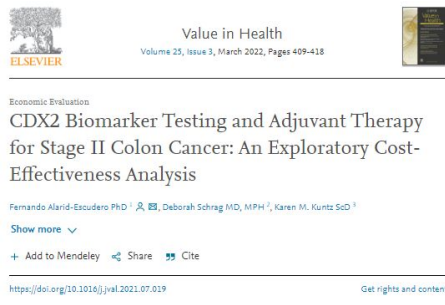
Git & GitHub for project management



The diagram below shows V0.1, 0.2 and 1.0 of a health economic model.

- One *branch* fixes a bug. It gets merged back in.
- One *branch* continues with adaptations, the bug fix is incorporated.
- One *branch* adds a shiny app, it gets merged back into the adaptation
- A *reviewer* edits the model and merges back to main.

Application to HEDS: Project model code



Abstract

Objectives

Adjuvant chemotherapy is not recommended for patients with average-risk **stage II (T3N0) colon cancer**. Nevertheless, a subgroup of these patients who are **CDX2-negative** might benefit from adjuvant chemotherapy. We evaluated the cost-effectiveness of testing for the absence of CDX2 expression followed by adjuvant chemotherapy (fluorouracil combined with **oxaliplatin** [FOLFOX]) for patients with **stage II colon cancer**.

Methods

We developed a decision model to simulate a hypothetical cohort of 65-year-old patients with average-risk stage II colon cancer with 7.2% of these patients being CDX2-negative under 2 different interventions: (1) test for the absence of CDX2 expression followed by adjuvant chemotherapy for CDX2-negative patients and (2) no CDX2 testing and no adjuvant chemotherapy for any patient. We derived **disease progression** parameters, adjuvant chemotherapy effectiveness and utilities from published analyses, and cancer care costs from the Surveillance, Epidemiology, and End Results (SEER)-Medicare data. Sensitivity analyses were conducted.

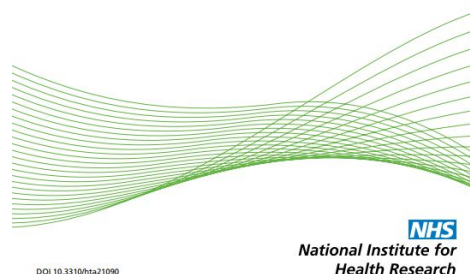
HEALTH TECHNOLOGY ASSESSMENT

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Oral anticoagulants for primary prevention, treatment and secondary prevention of venous thromboembolic disease, and for prevention of stroke in atrial fibrillation: systematic review, network meta-analysis and cost-effectiveness analysis

Jonathan AC Sterne, Pritesh N Bodalla, Peter A Bryden, Philippa A Davies, Jose A López-López, George N Okoli, Howard HZ Thom, Deborah M Caldwell, Sofia Dias, Diane Eaton, Julian PT Higgins, Will Hollingworth, Chris Salisbury, Jelena Savovic, Reecha Sofat, Anniya Stephens-Boal, Nicky J Welton and Aaron D Hingorani



<https://github.com/feralaes/cdx2cea>

<https://github.com/Bogdasayen/DOACs-AF-Economic-model>



Application to HEDS: Software development

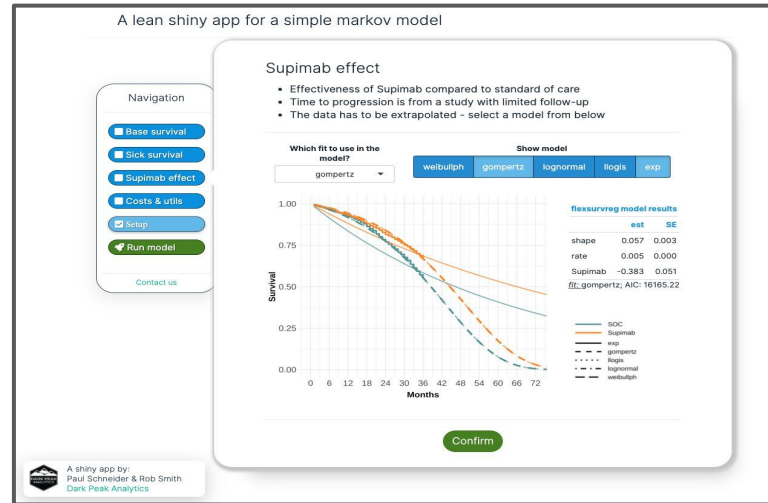
```
markov_trace = darkpeak::ArmaToMarkovLoop(markov_trace, params$trans_mat[, , i])
```



GitHub/CRAN

*A faster method of
running time
dependent markov
models using C++*

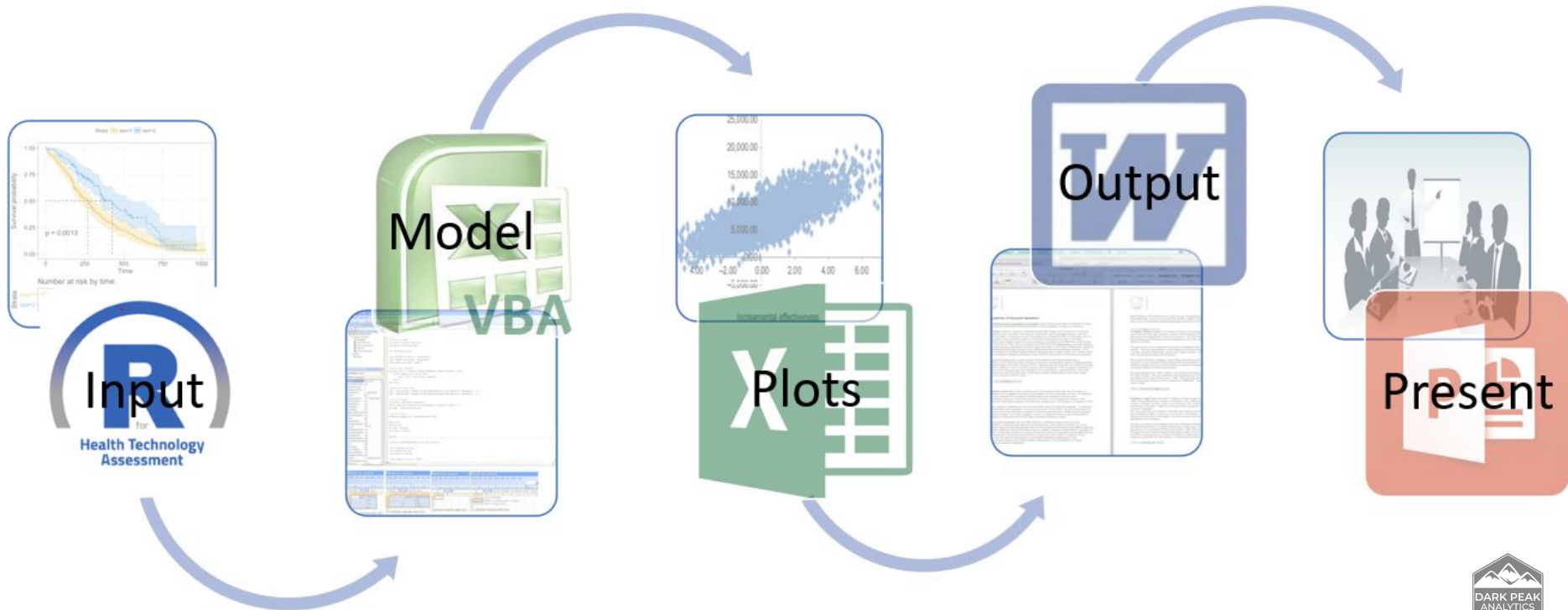
<https://github.com/dark-peak-analytics/darkpeak>



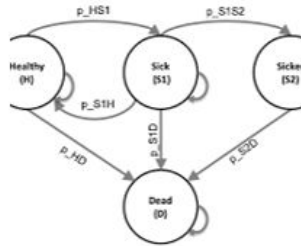
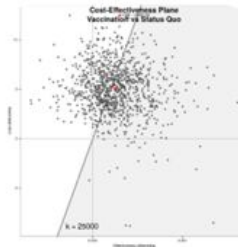
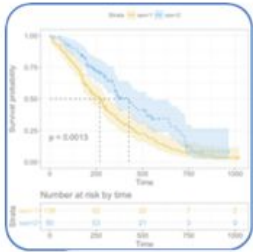
<https://darkpeakanalytics.shinyapps.io/sadm-mk2/>



Application to HEDS: Current Process



Application to HEDS: Future Process



VALUING HEALTH TECHNOLOGIES AT NICE:
COMMENDATIONS FOR IMPROVED INCORPORATION
OF TREATMENT VALUE IN HTA

DAVID GORDON¹, GABRIELLA LACONIGLI², SIMONE J. PHILLIPS³ and WILEY YEH⁴

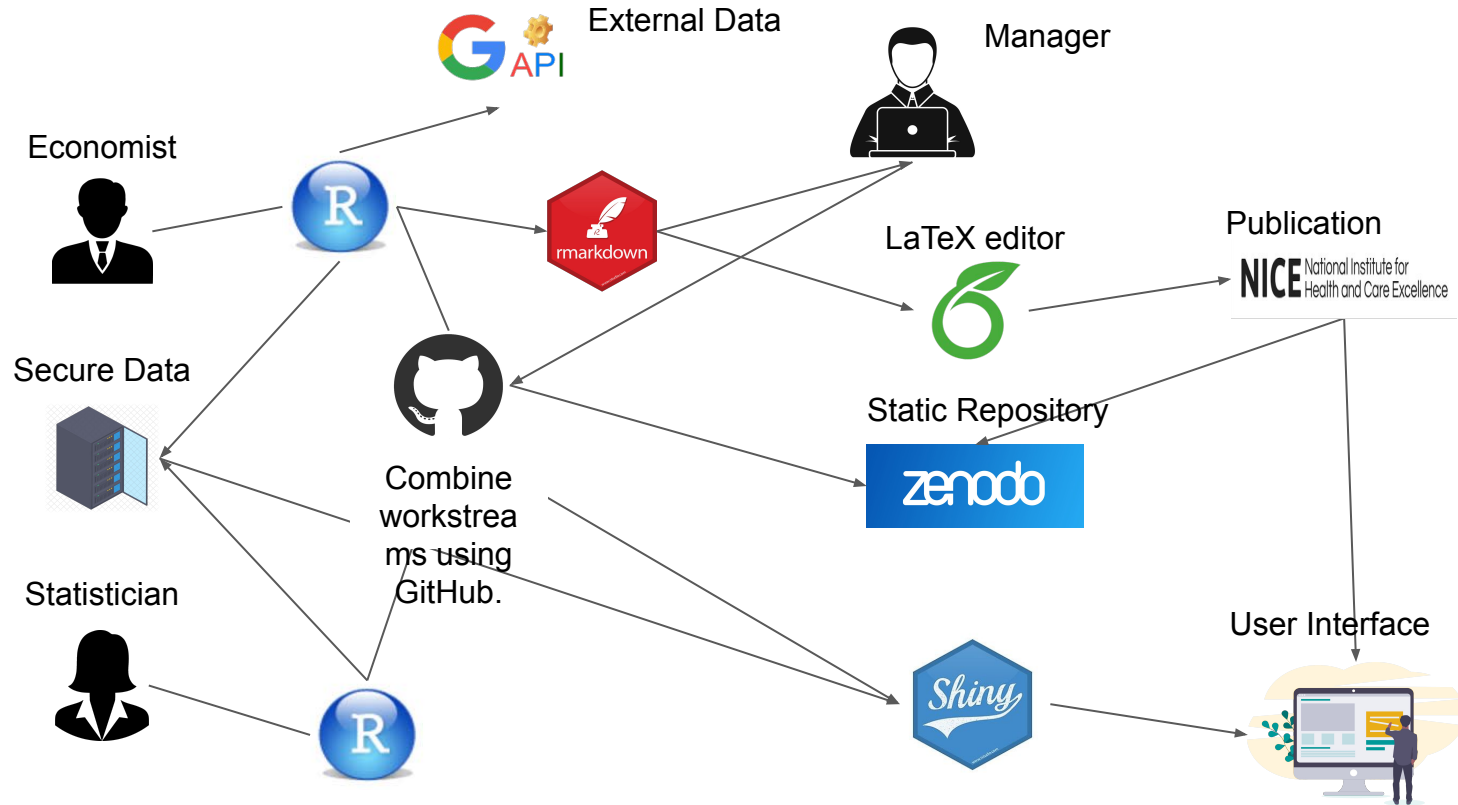
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²Department of Health Services, UCSD, San Diego, CA 92161
³The University of Chicago, Chicago, IL 60637
⁴Department of Biostatistics, Northwestern University, Evanston, IL 60201

1. INTRODUCTION

Healthcare costs are rising rapidly in many countries, and this has led to a growing interest in understanding the value of health technologies. The National Institute for Health and Care Excellence (NICE) in the United Kingdom has been at the forefront of this effort, and its recommendations have been influential in shaping healthcare policy. In this paper, we discuss the challenges of valuing health technologies and the importance of incorporating treatment value into health technology assessment (HTA). We also discuss the role of NICE in this process and the importance of understanding the relationship between treatment value and HTA.



Application to HEDS: Transparent Modelling





Session 2 - Demonstration

*Working together using
RStudio, Git and GitHub*



Session 3 - Q&A

*A chance to ask
questions.*

ChatGPT, write me a haiku about Git ...

Code is my art,
Crafting lines with care and heart,
Git keeps it safe.

ChatGPT, write me a funny poem about Git & GitHub for HTA ...

Git and GitHub, they're the way to go,
For HTA models, they're key to success, you know,
No more V42RS or messy code,
Git and GitHub keep everything in abode.

So why wait? Give them a try,
Git and GitHub will never deny,
You the tools you need to succeed,
Health economic models, they'll plant the seed.

Version Control in RStudio

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